

### Office Action Summary

**Application No.**

10/696,752

**Applicant(s)**

GILAT ET AL.

**Examiner**

KAJ K. OLSEN

**Art Unit**

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 September 2007.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-58 is/are pending in the application.  
4a) Of the above claim(s) 9, 20-25, 32, 37-49, 54, 55 and 58 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-4, 7 and 8 is/are rejected.  
7) ☒ Claim(s) 5, 6, 10-19, 26-31, 33-36, 50-53, 56 and 57 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Final Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 10-29-03; 12-30-03; 6-14-04  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of group I in the reply filed on 9-26-2007 is acknowledged. Applicant's election of species A and sub-species Ab is also acknowledged. Claims 9, 20-25, 32, 37-49, 54, 55, and 58 are withdrawn from consideration as being drawn to non-elected inventions.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3, 4, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al (Analytical Sciences, 17, May 2001, pp. 599-604) in view of Saskia et al (Free Radical Biology & Medicine, 30(3), 1996, pp. 331-342).

4. Yang discloses a method of identifying and selecting therapeutic compounds having a predetermined core structure (flavonoids) comprising establishing a relationship between a physical-chemical profile (oxidation potential) and a biological activity where the biological activity is measured in an assay (50% inhibition of lipid peroxidation (IC<sub>50</sub>)) effective in detecting compounds (flavonoids), which Saskia evidences can be utilized for targeted disorders. See Yang, "Results" on pp. 600-602, and see Saskia, discussion on p. 335. Yang does not explicitly disclose testing further potential therapeutic candidates with said core structure for the

physical-chemical properties and selecting them based on a range predefined by the physical-chemical/biological relationship. However, Yang states that “this method [relating the half-wave potential to  $IC_{50}$ ] is expected to be useful for the quick screening of flavonoid antioxidants” (see abstract) and “the method established herein is expected to be a simple method for screening flavonoid antioxidants and estimating the AA [antioxidant activity] of flavonoid-containing foods and medicinal plants” (see the conclusion). Hence the purpose disclosed by Yang for relating the physical-chemical property to a biological activity for the select flavonoids screened is for the purpose of providing a future screening of other flavonoid containing substances. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the established relationship defined by Yang for the study of further flavonoids so as to provide a quick screening of additional compounds without having to resort to a time consuming and labor intensive LPO assay for every particular compound of interest. Yang also does not explicitly disclose utilizing a predefined range from the physical-chemical/biological relationship. However, Yang relates the physical-chemical property (oxidation potential) to concentration of flavonoid needed for 50% inhibition (see fig. 4 and equation 3 on p. 602) (i.e. Yang is relating the oxidation potential to a particular efficacy of the flavonoid). Saskia teaches in a similar assay relating electrochemical response of flavonoids to its biological efficacy that the range of responses can be classified as indicating good, moderate, or bad inhibitors. See p. 337, col. 1. In other words, Saskia teaches that predefined ranges can be defined in order to classify the efficacy indicated for the flavonoid. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize predefined ranges as suggested by Saskia to sort the physical-chemical properties of Yang so as to classify the compounds being

screened as having good, moderate or poor anticipated efficacies in order to identify the compounds meriting further scrutiny.

5. With respect to the use of an oxidation potential wave, see Yang, p. 599, col. 2.
6. With respect to the use of the onset of oxidation, fig. 3 of Yang shows the typical voltammetric profiles for the compounds. It is noted that the various curves being shown all have similar oxidation slopes with the onset of oxidation occurring some 0.05 V prior to the  $E_{1/2}$  potential utilized by Yang. Because there is not an appreciable phenomenological distinction between when the onset of oxidation occurs and the half-wave potential occurs (i.e. the two potentials are offset by a mere voltage shift), utilizing the onset of oxidation instead of the half-wave potential would have required only routine skill in the art.
7. With respect to the use of a energy or transport profile, see Yang's discussion of the use of a partition coefficient on p. 600.
8. Claims 2 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang in view of Saskia as applied to claim 1 above, and further in view of Rapta et al (Free Radical Biology & Medicine, 18(5), 1995, pp. 901-908).
9. With respect to claim 2, both Yang and Saskia taught the use of swept potentials, but didn't explicitly recite the use of cyclic voltammetry to generate the voltammograms. Rapta teaches that cyclic voltammetry is a conventional manner for measuring an oxidation potential for a molecule. See fig. 1 and "Anodic oxidation" on pp. 903-905. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Rapta for the method of Yang and Saskia because the use of conventional potential sweep methods for the sweeping of Yang and Saskia requires only routine skill in the art. In addition,

Rapta teaches that measuring the reduction (which would be observable in a cyclic voltammogram but not a linear voltammogram) also provides useful information about the efficacy of the monitored antioxidant (see p. 904). It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize cyclic voltammetry for the measurement of Yang and Saskia so as to provide the reducing peaks and its influence on the flavonoid activity.

10. With respect to claim 7, Yang and Saskia relied only on the oxidation peak and did not teach the use of a potential for a reduction wave. However, as discussed above, Rapta teaches that the location of the reduction wave gives information about the ease of autooxidation, which impacts the antioxidant's efficacy. See p. 904. Hence, it would have been obvious to one of ordinary skill in the art at the time the invention was being made to also incorporate the potential of the reduction wave into the physical-chemical/biological relationship so as to account for the influence that autooxidation has on the flavonoid efficacy.

***Allowable Subject Matter***

11. Claims 5, 6, 10-19, 26-31, 33-36, 50-53, 56, and 57 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: With respect to claims 5 and 6, the prior art does not disclose nor render obvious all the cumulative limitations of claim 1 where the physical-chemical profile comprises the parameter of either the reversibility of one or more oxidation waves or the reversibility of one of more

reduction waves. With respect to claims 10, 26, and 33, the prior art does not disclose nor render obvious all the cumulative limitations of claim 1, claims 1 and 3, or claims 1 and 4 and further comprising the use of the set forth assays of claims 10, 26, or 33 for the biological assay. Claims 11-19, 27-31, 34-36, 50-53, 56, and 57 are objected to because they depend from the above claims containing allowable subject matter.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KAJ K. OLSEN whose telephone number is (571)272-1344. The examiner can normally be reached on Monday through Friday from 8:00 A.M. to 4:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen, can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).